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Studies of West Indian plants — I

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1. THE JAMAICAN SPECIES OF HERNANDIA

On March 20, 1908, while exploring a wooded hill near Dolphin Head Mountain, parish of Hanover, in the western part of Jamaica, in company with Mr. William Harris, we observed large trees which were unknown to us from the character of their trunks, and too high to enable us to determine the character of their foliage without a pair of field glasses, which we did not have along that day. While sitting at lunch in a relatively open place in the forest, we observed the top of one of these trees, some 30 meters high and at least a meter in diameter, against the sky line, and saw that it was covered with round fruits, some of which we found on the ground under this tree, and realized that we had found a very interesting species. Our negro guide felled a somewhat smaller tree with his machete, and thus enabled us to obtain excellent fruiting herbarium and museum specimens of the Jamaican species of *Hernandia.*

Up to this time the tree does not appear to have been definitely known to botanists in the island of Jamaica. Patrick Browne (Civil and Natural History of Jamaica, 373, 1756), admits the genus and remarks: "This tree is pretty common in Barbadoes and Mountserat, and grows to a considerable size in those islands; but I have not seen any in Jamaica, though I have been credibly informed that it was frequent in the parish of Portland. The cups that sustain and partly invelop the nuts are very large, and, as they move in the wind, keep a whistling noise, which is often frightful to unwary travellers. The seeds are very oily." Browne cites Jack-in-a-Box as a common name.

In Flora of the British West Indian Islands, page 285, published in 1860, Grisebach does not attribute the tree to Jamaica at all, thus indicating that no specimens of it were extant at that time, but Meissner, in DeCandolle's Prodromus (15^1 : 263. 1864), does credit it to Jamaica, and cites P. Browne, although, as he omits an exclamation mark, it is evident that he did not see a specimen, nor does his herbarium, now at the New York Botanical Garden, contain any *Hernandia* from Jamaica; Meissner refers the record of P. Browne to the species *Hernandia sonora* L., native of the Windward Islands and Porto Rico, and perhaps also of the East Indies.

Hernandia sonora is readily distinguishable from the other species by its peltate, long-pointed leaves, and the only other West Indian species known is the Cuban *Hernandia cubensis* Griseb., which has narrow long-acuminate leaves. Under *H. sonora*, Meissner (DC. Prodr. 264) notes a variety *guadeloupensis* from Guadeloupe Island, which has leaves rounded at the apex and base, or slightly cordate. It is possible but not probable that this is the same as the Jamaican tree, but the description is insufficient to make this certain. In any event, the Jamaican tree is evidently specifically distinct from either *H. sonora*, or *H. cubensis*. There is a species of *Hernandia*, *H. guianensis*, in French Guiana, but not much is known of it other than the plate of Aublet, Pl. Guian. *pl. 329*, which shows that this must be quite different from the plant here to be described.

Hernandia jamaicensis Britton & Harris

A tree 30 m. high or less, with spreading and ascending stout branches, the trunk becoming at least a meter in diameter, the young twigs more or less flattened and angled. Leaves subcoriaceous, sometimes 2.5 dm. long; petioles stout, somewhat shorter than the blade, but sometimes 1 dm. in length, the blades elliptic to elliptic-obovate, obtuse at the apex, obtuse or subcuneate at the base, 3-nerved or faintly 5-nerved, not at all peltate; inflorescence as long as the leaves or longer, racemose or racemose-paniculate; calyx of the pistillate flowers turbinate, about 5 mm. long, its margin truncate; fruiting calyx subglobose, yellow, fleshy, 3–4 cm. long and about as thick as long, its wall about 1 mm. thick, its orifice 1.5–2 cm. wide with a slightly raised margin; drupe ovoid, nearly 2 cm. long, 1.5 cm. in diameter, rounded at the base, bluntly pointed, bluntly 8-ribbed and rugose between the ribs.

On wooded hill, at about 400 meters altitude, near Dolphin Head, Jamaica (*Britton 2321*, type; *Harris 10312*); Woodstock, Westmoreland, Jamaica (*Harris 9835*).

2. THE GENUS CASSIPOUREA IN JAMAICA

Cassipourea was proposed by Aublet (Hist. Pl. Guian. **1**: 528) in 1775 for a tree of French Guiana, his *Cassipourea guianensis* being the type of the genus. Swartz (Prodr. 84) published the generic name *Legnotis*, including in it two species, *L. elliptica* from Jamaica and *L. Cassipourea*, based on Aublet's *Cassipourea guianensis;* he assigns no reason why his name thus published in 1788 should replace Aublet's *Cassipourea* of 1775. Poiret (Lam. Encycl. Suppl. **2**: 131) properly adopted the older generic name and transferred the *Legnotis elliptica* of Swartz to it. A number of additional species from tropical America and Africa have since been added by several authors, including *Cassipourea alba* Griseb. from the island of Dominica. That *Cassipourea* Aublet and *Legnotis* Swartz are the same genus seems evident from an examination of specimens.

Cassipourea elliptica (Sw.) Poir. is a shrub or small tree, sometimes reaching 6 meters in height, and grows in Jamaica on rocky wooded hillsides. Its elliptic long-pointed leaves are as brilliantly shining as those of any plant known to me, and individuals seen in contrast to the duller luster of other trees and shrubs stand out as most striking elements in the landscape. Mr. Harris, Dr. Hollick, and I, while botanizing near Kempshot, at an altitude of about 500 meters in the parish of St. James, western Jamaica, on March 23, 1908, had our first opportunity of studying this wonderfully beautiful plant in the field, and were fortunate enough to see its bright white flowers with strikingly laciniate petals, and it was an experience long to be remembered. The lustrous leaves and pediceled flowers distinguish *Cassipourea elliptica* from the two species to be described below. A remarkable feature of an individual tree found by us near Kempshot on March 24, 1908, is the development of the lower branches, which droop and bear leaves not more than one half the size of those on the flowering branches above, the twigs of these drooping branches being very slender and repeatedly forked. We preserved herbarium specimens of this curious bud-sport; if cuttings from such a branch could be propagated, they would doubtless yield a weeping *Cassipourea*.

The distinguishing characters of the three Jamaica species are indicated by the following key:

Pedicels as long as the calyx or longer; leaves brilliantly shining. 1. *C. elliptica.*
Pedicels much shorter than the calyx, or scarcely at all developed; leaves dull or faintly shining.
  Leaves elliptic-lanceolate, narrowed at the base, the petioles about as long as the calyx. 2. *C. subsessilis.*
  Leaves ovate, subcordate at the base, petioles only half as long as the calyx. 3. *C. subcordata.*

1. CASSIPOUREA ELLIPTICA (Sw.) Poiret

On rocky wooded hills, Kempshot and vicinity (*Britton 2397* and *2423; Harris 10330, 10340*); collected also in Jamaica by Swartz and by Purdie.

2. **Cassipourea subsessilis** sp. nov.

A tree about 6 m. high with slender spreading branches. Leaves elliptic-lanceolate, 6–9 cm. long, 3.5 cm. wide or less, acuminate at the apex, narrowed at the base, entire-margined, dull green on both sides, or faintly shining above, the midvein prominent beneath, the petioles 4–7 mm. long; flowers solitary in the axils, nearly or quite sessile; calyx campanulate, its tube 3 mm. long, its lobes ovate to ovate-lanceolate, about as long as the tube; ovary appressed-pubescent; capsule subfusiform, appressed-pubescent, about 1.3 mm. long, 2.5 mm. in diameter, surmounted by the persistent appressed-pubescent style.

On wooded hill near Dolphin Head, parish of Hanover, Jamaica, at about 400 meters altitude (*Britton 2316; Harris 10307*).

3. **Cassipourea subcordata** sp. nov.

A tree 4 m. high, the twigs rather stout, the branches ascending. Leaves ovate, bright green on both sides but not strongly shining, 5–7 cm. long, 3.5 cm. wide or less, short-acuminate at the apex, subcordate at the base, the midvein prominent beneath, the petioles rather stout, 2–3 mm. long; flowers 1 or 2 together in the axils, very nearly sessile; calyx tube obconic, 2.5 mm. long, the lobes ovate, obtusish, about as long as the tube, petals white, fimbriate.

Along a brook, Troy, Jamaica (*Britton 488*, type); collected also by Mr. Harris at the same place (*no. 9466*).

3. THE GENUS TEREBINTHUS P. BR. IN THE WEST INDIES

The type species of *Terebinthus* P. Br. is *Pistacia Simaruba* L., commonly known as the West Indian birch. A subsequent name for the genus is *Bursera* Jacq. but, as shown by Dr. J. N. Rose (Contr. U. S. Nat. Herb. **10**: 118), this name is unavailable, because *Terebinthus* has priority. Seven species are known to me from the West Indies, two of them here to be described as new; the Mexican species have been listed by Dr. Rose.

Leaflets broad, ovate, elliptic, or obovate.
  Leaflets 3–11, ovate, acuminate or acute.
    Leaflets thin; bark exfoliating in thin layers. 1. *T. Simaruba.*
    Leaflets coriaceous; bark close. 2. *T. Hollickii.*
  Leaflets only 1, obovate to elliptic, obtuse. 3. *T. simplicifolia.*
Leaflets narrow, oblong to lanceolate or oblanceolate.
  Leaflets obtuse at the base. 4. *T. glauca.*
  Leaflets acute at the base.
    Inflorescence elongated, sometimes as long as the leaves.
      Leaflets 5–11, linear-oblong to linear-lanceolate. 5. *T. angustata.*
      Leaflets 3–5, oblong to oblanceolate. 6. *T. inaguensis.*
    Inflorescence short, compact, in fruit not longer than the petioles; leaflets 1–3. 7. *T. Nashii.*

1. TEREBINTHUS SIMARUBA (L.) W. F. Wight, Contr. U. S. Nat. Herb. **10**: 122. 1906.

Pistacia Simaruba L. Sp. Pl. 1026. 1753.
Bursera gummifera L. Sp. Pl. ed. 2, 471. 1762.
Bursera gummifera glabra Griseb. Fl. Br. W. I. 173. 1859.
Bursera gummifera pubescens Engler, in DC. Mon. Phan. **4**: 40. 1883.

Florida; Bahamas; Cuba; Jamaica; Haiti; Porto Rico; St. Thomas to Grenada; Mexico to Colombia and Venezuela.

Most of the Jamaica trees have pubescent twigs and leaf-rachises; this hairy race is evidently the typical one, based by Linnaeus on Sloane, *pl. 199*.

2. **Terebinthus Hollickii** sp. nov

A tree 6 m. high, with trunk 2.5 dm. in diameter, its bark about 8 mm. thick, reddish-gray outside, red inside, close, not peeling off in papery layers. Young twigs stout, pubescent; leaves 8–12 cm. long, clustered at the ends of the twigs; rachis pubescent with spreading hairs; leaflets 3–7, coriaceous, ovate 3–6 cm. long, 1.5–3 cm. wide, entire-margined, obliquely rounded at the base, short-acuminate at the apex, glabrous or very nearly so when old, very inconspicuously veined above, rather prominently veined beneath; petiolules stout, 3–5 mm. long; fruiting inflorescence 4–7 cm. long, the raceme simple or slightly compound, its axis pubescent; fruits 8–10 mm. long, about 7 mm. thick, bluntly triangular, on stout pedicels 4 or 5 mm. long; seed sharply 3-angled.

Dry rocky hillside, Fort Henderson, Kingston Harbor, Jamaica (*N. L. Britton & Arthur Hollick*, March 2, 1908, *no. 1816*).

3. **Terebinthus simplicifolia** (DC.)

Bursera simplicifolia DC. Prodr. **2**: 78. 1825.

Frequent on dry hillsides near the southern coast of Jamaica, becoming at least 13 meters high.

4. **Terebinthus glauca** (Griseb.)

Bursera glauca Griseb. Cat. Pl. Cuba 66. 1866.

Cuba.

5. **Terebinthus angustata** (Griseb.)

Bursera angustata Griseb. Cat. Pl. Cuba 65. 1866.

Cuba.

6. **Terebinthus inaguensis** (Britton)

Bursera inaguensis Britton, Bull. N. Y. Bot. Gard. **3**: 443. 1905.

Bahama Islands, from Eleuthera and Great Guana Cay to Inagua.

Combs 454, from Calicita, Santa Clara Province, Cuba, resembles this very closely, more closely than it does *T. angustata*.

7. **Terebinthus Nashii** sp. nov.

A tree about 3 m. high with nearly smooth terete twigs, glabrous throughout. Leaves 1–3-foliolate, the slender petiole 5–15 mm. long, somewhat glaucous; leaflets linear-oblong, narrowed at the base, obtuse or acutish and mucronulate at the apex, 3–5 cm. long, 1–1.5 cm. wide, pale green, very indistinctly veined on both sides, chartaceous; fruiting inflorescence short, few-fruited, 2 cm. long or less; fruits 6–7 mm. long, nearly as thick as long, borne on short stalks, 2–5 mm. long, the calyx persistent at their bases.

Gonaives to La Hotte Rochée on road to Terre Neuve (*Geo. V. Nash & Norman Taylor*, August 12, 1905, *no. 1559*).

4. PASSIFLORA CILIATA Ait.

This species was described in 1789 (Hort. Kew. **1** : 310) from plants cultivated by Mrs. Norman, who introduced it into England from Jamaica in that year. In the Botanical Magazine, plate 288, published January 1st, 1795, Curtis remarks that he saw it during the latter part of the preceding summer with great profusion of flowers in several collections, and the figure given by him at this place was made from a plant in the collection of Mr. Vere.

This beautiful passion-flower seems to have been much misunderstood by subsequent botanists. It appears to be confined naturally to the island of Jamaica, where Mrs. Britton found it in March, 1908, in quantities along roadsides through the hills near Bulstrode, parish of Westmoreland, growing with *P. foetida*.

The plant has been supposed to be a variety of *P. foetida*, and has been so ranked by a number of authors. Grisebach, in Flora of the British West Indies, however, regarded it as specifically distinct, but apparently erred in attributing it to the Bahamas as well as to Jamaica. It has not been found in the Bahamas during any of our extensive explorations of that archipelago. So far as one can see, Grisebach was quite justified in maintaining it as a species distinct from *P. foetida*.

5. BIDENS PILOSA L.

This species was founded by Linnaeus (Sp. Pl. 832) in 1753 on the "*Bidens latifolia* hirsutior semine angustiore radiato" of Dillenius Hort. Eltham. 51. *pl. 43. f. 51.* The name has since been used by many authors for a very common and well-known tropical weed and often with the remark that it is not pilose. Dr. Gray surmised that the figure of Dillenius might really have been made from a plant of *B. frondosa*. During repeated trips to the West Indies I have looked closely at a great many individuals of this weedy plant but never could find any pilose ones until this spring; the species is usually almost or quite without trichomes. But at Moneague, Parish of St. Ann's, Jamaica, in April, 1908, I noticed with great interest a roadside ditch full of these plants, some densely pilose all over, some essentially glabrous. I could not see at the time of collecting nor have I been able to see from further study of the dried specimens, any other difference whatever in the two races. Both are rayless, have identical achenes varying from 2 to 4, with awns relatively of the same length, leaves of the same shape and texture and involucral scales alike From the environment and occurrence there was nothing to prevent one coming from the seeds of the other. The plants as here observed are not as stout nor as large-leaved as the figure of Dillenius. The typical race of *Bidens pilosa* L. is then well named, but it is apparently rare.

Bidens leucantha (L.) Willd. published by Linnaeus as *Coreopsis leucantha* (Sp. Pl. ed. 2. 1282), also a very common tropical weed, has sometimes been regarded as a variety of *B. pilosa.* It has white rays often 1.5 cm. long, and in life appears very different, but herbarium specimens from which the rays have fallen are often difficult to place. It commonly grows with the glabrous *B. pilosa*, but perhaps more frequently in separate patches and in the West Indies one frequently sees large areas inhabited by the one to the exclusion of the other. At Kempshot, near Montego Bay, Jamaica, they grew together in a small garden and I was able to study them side by side; here *B. leucantha* had the involucral scales spreading at flowering time, while those of the glabrous *B. pilosa* were erect. I am inclined to regard *leucantha* as a distinct species. There is a race with undivided leaves.

6. THE GENUS MALACHE B. VOGEL.

Malache scabra was proposed by B. Vogel (Trew, Pl. Select. 50. *pl. 90.* 1772) as the name of a mangrove-swamp shrub common nearly throughout the West Indian region, subsequently called by Cavanilles (Diss. **3**: 136. *pl. 46. f. 1.* 1787) *Pavonia spicata*, and by Swartz (Fl. Ind. Occ. **2**: 1215. 1800) *Pavonia racemosa.* Trew cites pre-Linnaean names for the plant, and gives a detailed description and a beautiful illustration of it, especially referring to Sloane, Hist. Jam. 221. *pl. 139. f. 2;* Sloane's description and illustration are unmistakable for the species. Linnaeus does not appear to have had any name for it.

Pavonia Cav. has as its type species *P. spinifex* Cav. After studying quantities of this and of *Malache scabra*, both in the field and in the herbarium, I am confident that they should not be included in the same genus, inasmuch as they differ too widely in the floral and fruit-structure and in habit; only the most artificial classification can retain them as congeneric.

Malache scabra is a typical shrub of coastal swamps from Florida southward through the Caribbean region to Central America, Colombia, Trinidad, and Brazil, and is recorded as growing as far south as Peru on the western side of South America.

Having seen much of this species along mangrove swamps, nearly or quite always within the tidal influence at high water, I was surprised and interested while exploring the high rocky "Cockpit Country" of Jamaica with Mr. William Harris in September, 1907, to find a similar plant on hills in wet woods in the vicinity of Troy, reaching altitudes of at least 600 meters. Mr. Harris had collected fruiting specimens of it the year before, and had noticed its resemblance to the coastal shrub; Professor Urban has recently described it from these specimens (*Harris 9457*), as *Pavonia racemosa* var. *troyana* (Symb. Ant. **5**: 530. 1908). I obtained additional specimens both in flower and fruit in 1907 (*Britton 515*) and from field studies made then in comparison with *Malache scabra* I am convinced that this "Cockpit Country" plant is specifically distinct, and to be called **Malache troyana**; it has broader involucral bracts, much broader and differently shaped carpels, the anther-bearing part of the stamen-column proportionately shorter, and the fruiting peduncles are shorter and stouter. The plant is tall and slender and sometimes approaches the form of a small tree up to 4 or 5 meters high.

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